ABSTRACT

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Title of thesis: Association of phase angle with parameters of energy metabolism in patients with COPD

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Chronic obstructive pulmonary disease (COPD) is a serious inflammatory disorder with constantly rising global prevalence. In addition to the characteristic irritation of respiratory tract with a progressive decline in pulmonary function, it is associated with significant systemic effects that contribute to the severity of the health condition. Moreover, metabolic changes related to ongoing systemic inflammation including increased respiratory demands, inappropriate nutritional supplementation and pharmacotherapy are observed in patients with COPD.

In this work we focused on finding the association between phase angle (PA), the cell mass predictor obtained with bioelectrical impedance analysis and parameters of energy metabolism determined by indirect calorimetry. In total, 50 patients with a stable COPD were analysed, who were further divided by gender and measured PA with a limit value of 5.

In group with PA < 5, we observed significantly lower body mass, BMI and body surface. We also recorded the trend of decreasing values for O_2 consumption and CO_2 production. The evaluation of indirect calorimetry revealed ongoing hypermetabolism in 82 % of patients with PA < 5 and 73 % of patients with PA > 5. In both groups, the fat utilization was predominant, however, we observed the significant differences in absolute and relative values of protein utilization. Finally, we found a positive correlation among PA and O_2 consumption, CO_2 production, rest energy expenditure and utilization of proteins.